## FIGURES

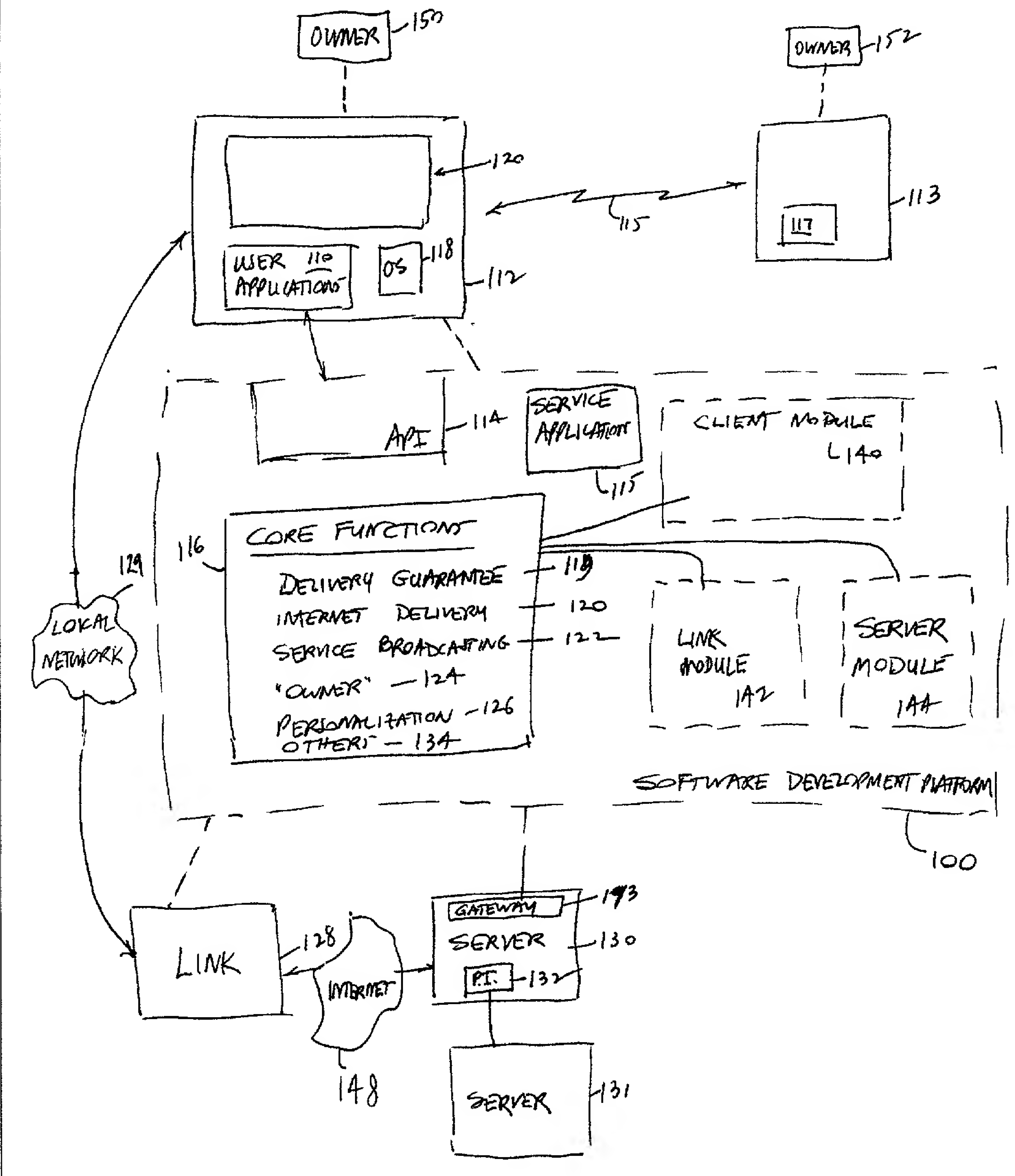

FIGURE 1

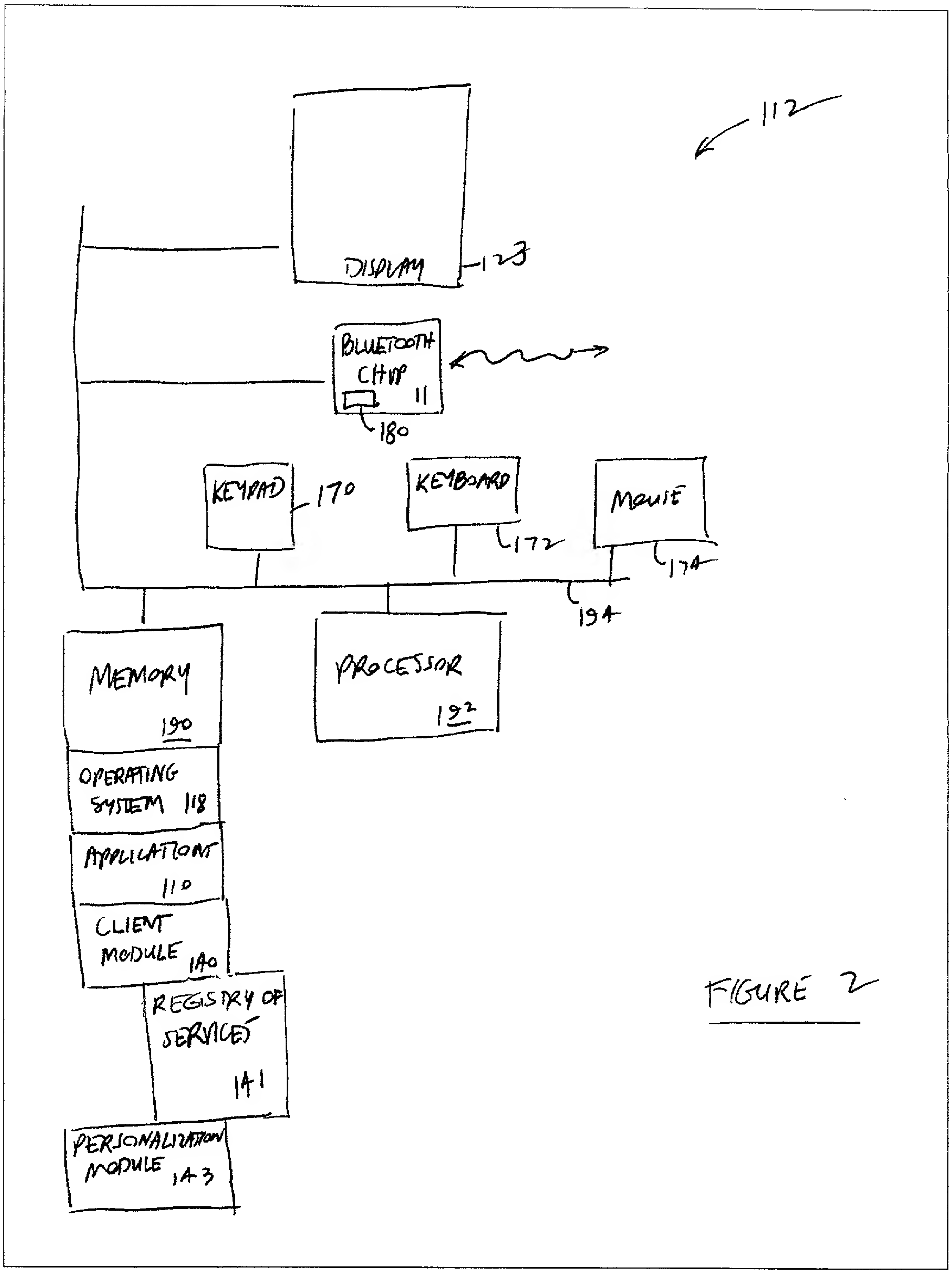
112
DISPLAY
123
BLUETOOTH CHIP
11
180
KEYPAD
170
KEYBOARD
172
MOUSE
174
194
MEMORY
190
PROCESSOR
192
OPERATING SYSTEM 118
APPLICATIONS
110
CLIENT MODULE
140
REGISTRY OF SERVICES
141
PERSONALIZATION MODULE
143

FIGURE 2

FIG. 3A

```
• LocalService {
     char * serviceName;
     int receiveWhenRunning;
     int receiveWhenNotRunning;
     int running;
     int maxNumOfMessagesToStore;
     char * exp_fld1;
     char * exp_fld2;
     char * exp_fld3;
     char * exp_fld4;
     char * exp_fld5;
  };
```

FIG. 3B

```
• RemoteService {
     char * serviceName;
     char * userName;
  };
```

FIG. 3C

```
• KMessage {
     char * serviceName;
     char * date;
     char * recipient;
     char * sender;
     char * messageBody;
  };
```

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FIG. 4A

| | |
|---|---|
| Name | sendMessage |
| Arguments | char * to, char * serviceName, char * data |
| Return Values | int err |
| Description | This function provides sending capabilities so that messages or any kind of unformatted text can be sent between Bluetooth devices. Reception of the text is guaranteed, because even when the devices are not within range, the text is stored and communicated via an Internet connection. If a user is logged in to more than one device simultaneously, the message/text will be sent to both devices at the same time. |

FIG. 4B

| | |
|---|---|
| Name | getMessages |
| Arguments | struct KMessage * message |
| Return Values | int err |
| Description | The getMessages function retrieves all messages or any other unformatted text sent from another Bluetooth device. It returns the data in the KMessage data structure. If a user is logged in to more than one device simultaneously, the message/text will be received from both devices at the same time. |

FIG. 4C

| | |
|---|---|
| Name | getMessage |
| Arguments | struct KMessage * message |
| Return Values | int err |
| Description | The getMessage function retrieves just one message or any other unformatted text sent from another Bluetooth device. It returns the data in the KMessage data structure. If a user is logged in to more than one device simultaneously, the message/text will be received from both devices at the same time. |

FIG. 4D

| | |
|---|---|
| Name | getSurroundingServices |
| Arguments | struct RemoteService areaServices [] |
| Return Values | int err |
| Description | This function returns an array of mappings of users and services available on that user's device. This information was previously stored in a database termed the registry, which is a list of devices within range of a Bluetooth device. |

FIG. 4E

| | |
|---|---|
| Name | AddService |
| Arguments | char * serviceName |
| Return Values | int err |
| Description | This function adds a service entry to the registry. |

FIG. 4F

| | |
|---|---|
| Name | RemoveService |
| Arguments | char * serviceName |
| Return Values | int err |
| Description | This function removes a service entry from the registry. |

FIG. 4G

| | |
|---|---|
| Name | changePMTdata |
| Arguments | <<waiting to hear about PMT API>> |
| Return Values | int err |
| Description | A function that allows users to update their personal PMT data and preferences using their particular devices. If the device is not within Bluetooth range of an Internet connection, it will store these update preferences, and make changes within the permanent PMT upon coming into contact with an Internet connection. |

FIG. 4H

| | |
|---|---|
| Name | GetPMTdata |
| Arguments | char * user |
| Return Values | int err |
| Description | Allows a service to get the PMT data of a particular user from the PMT database. If the service cannot reach the PMT database, the information comes from the local storage on the device of the user. Only information that is designated as shared or public data will be retrieved. |

FIG. 4I

| | |
|---|---|
| Name | ChangePMTpermissions |
| Arguments | <<waiting to hear about PMT API>> |
| Return Values | int err |
| Description | This function allows a user to change his PMT permissions from his device. |

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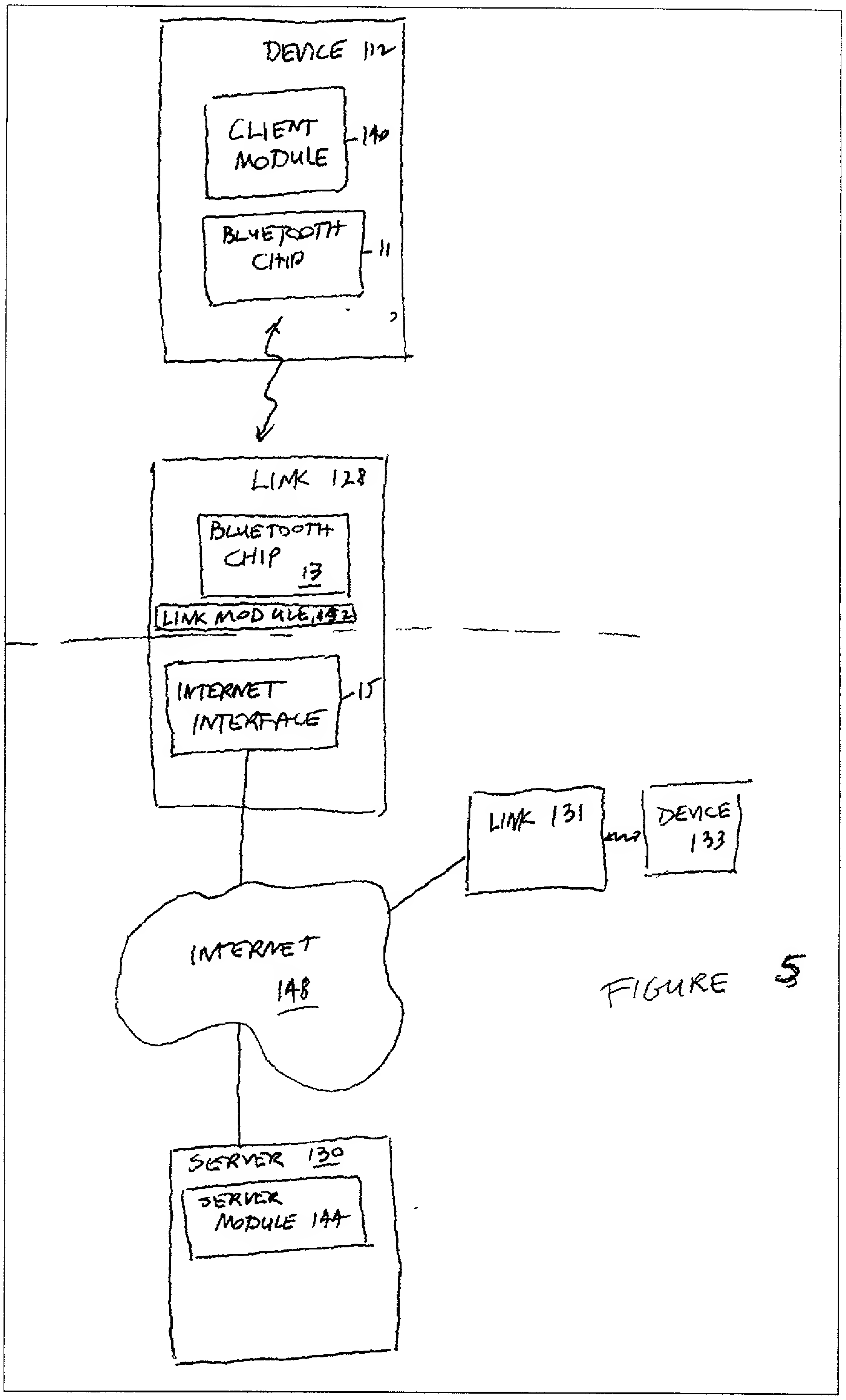
DEVICE 112
CLIENT MODULE
140
BLUETOOTH CHIP
11
LINK 128
BLUETOOTH CHIP 13
LINK MODULE, 132
INTERNET INTERFACE
15
LINK 131
DEVICE 133
INTERNET 148
SERVER 130
SERVER MODULE 144

FIGURE 5

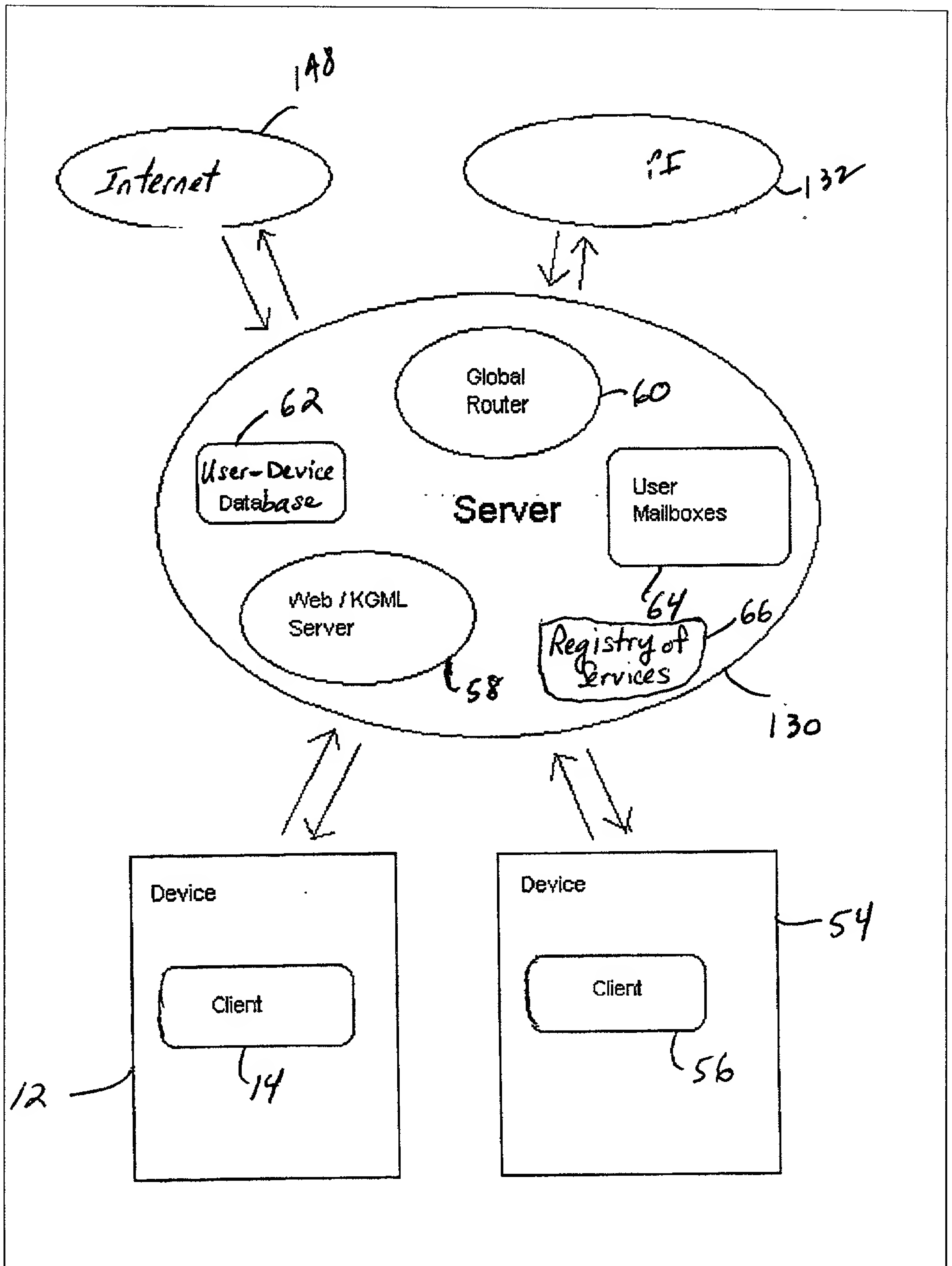
148
Internet
IF
132
Global Router
60
62
User-Device Database
Server
User Mailboxes
64
66
Web / KGML Server
58
Registry of Services
130
Device
Client
14
12
Device
Client
56
54

FIG. 6

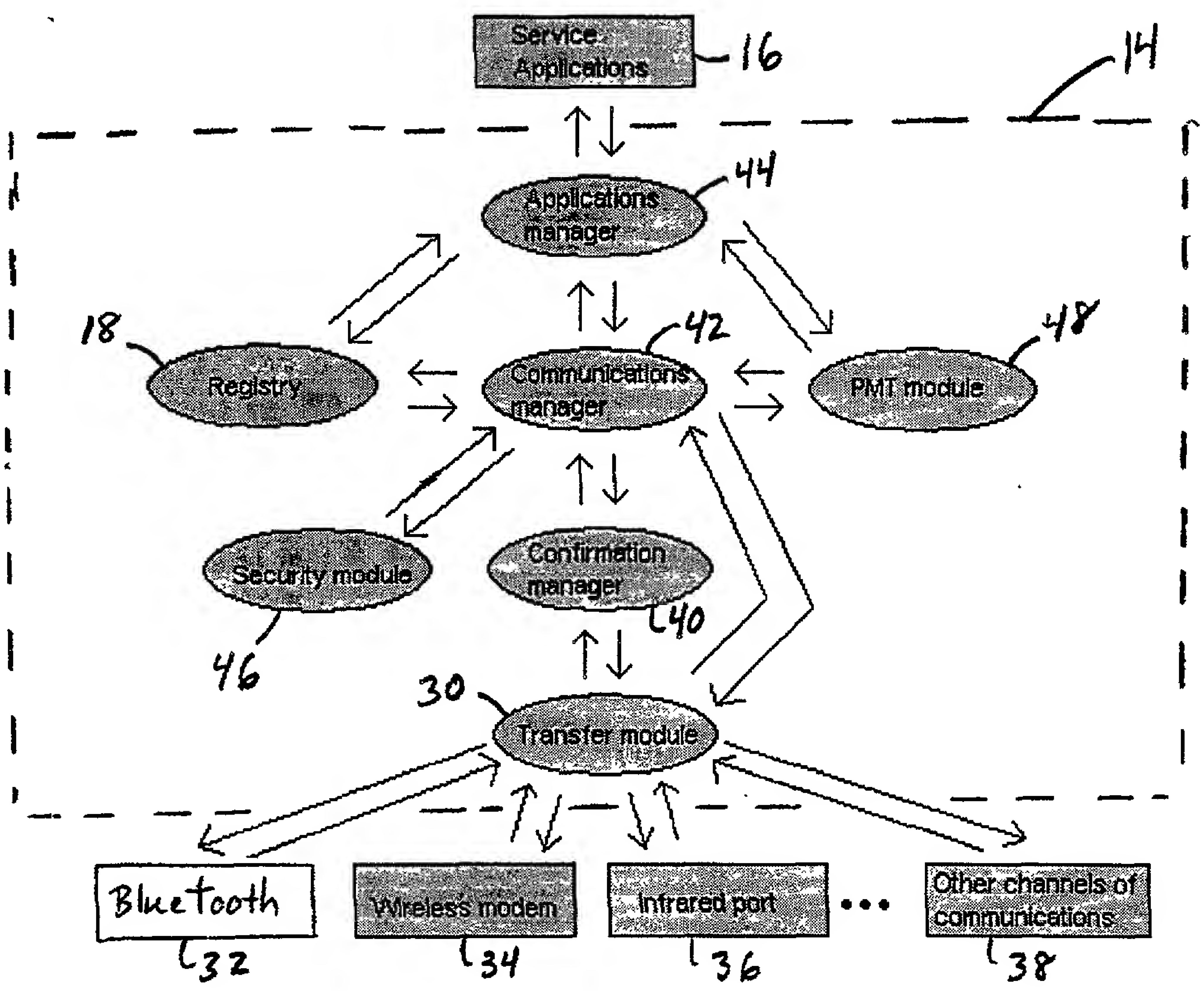

FIG. 7

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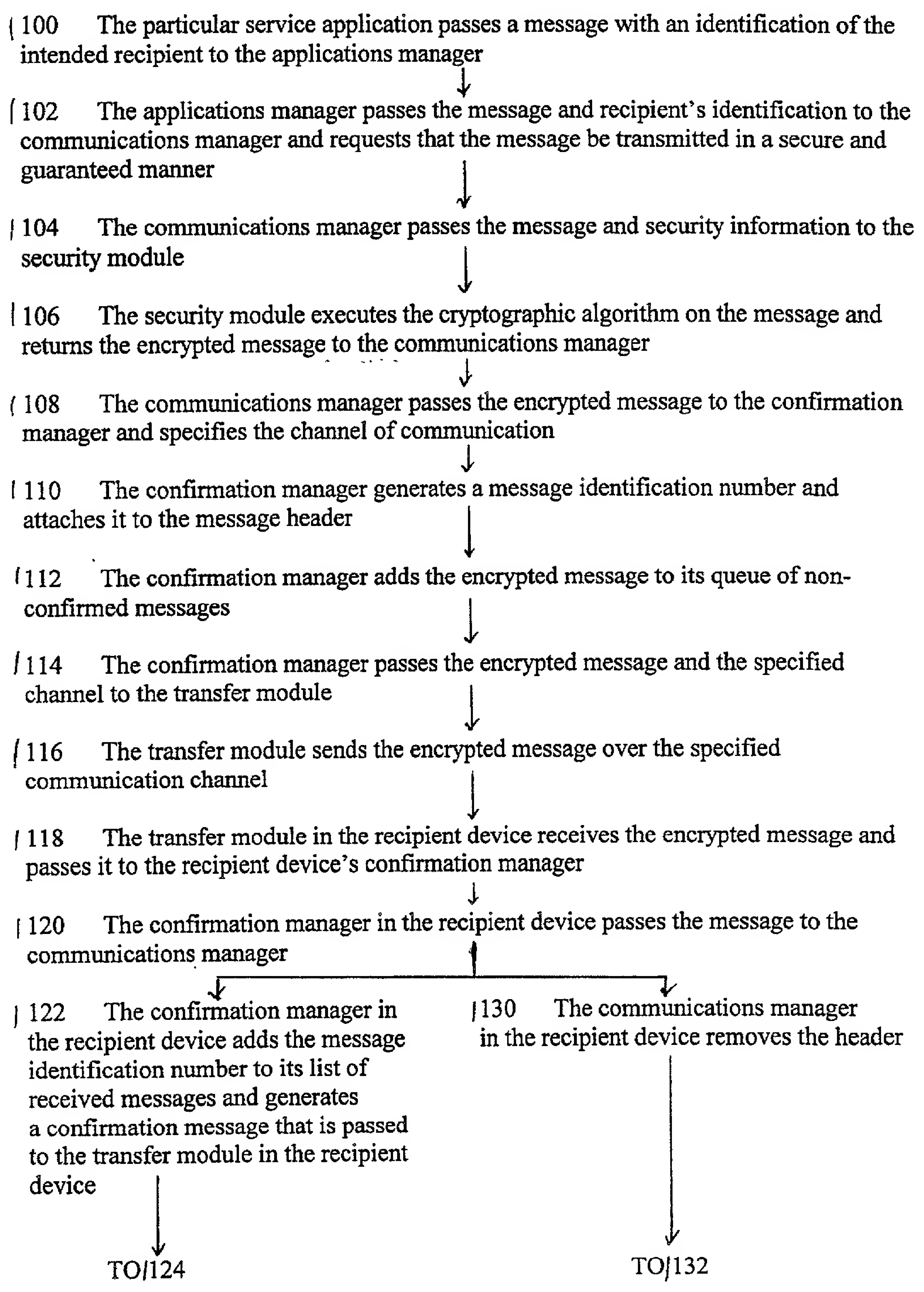


100 The particular service application passes a message with an identification of the intended recipient to the applications manager

102 The applications manager passes the message and recipient's identification to the communications manager and requests that the message be transmitted in a secure and guaranteed manner

104 The communications manager passes the message and security information to the security module

106 The security module executes the cryptographic algorithm on the message and returns the encrypted message to the communications manager

108 The communications manager passes the encrypted message to the confirmation manager and specifies the channel of communication

110 The confirmation manager generates a message identification number and attaches it to the message header

112 The confirmation manager adds the encrypted message to its queue of non-confirmed messages

114 The confirmation manager passes the encrypted message and the specified channel to the transfer module

116 The transfer module sends the encrypted message over the specified communication channel

118 The transfer module in the recipient device receives the encrypted message and passes it to the recipient device's confirmation manager

120 The confirmation manager in the recipient device passes the message to the communications manager

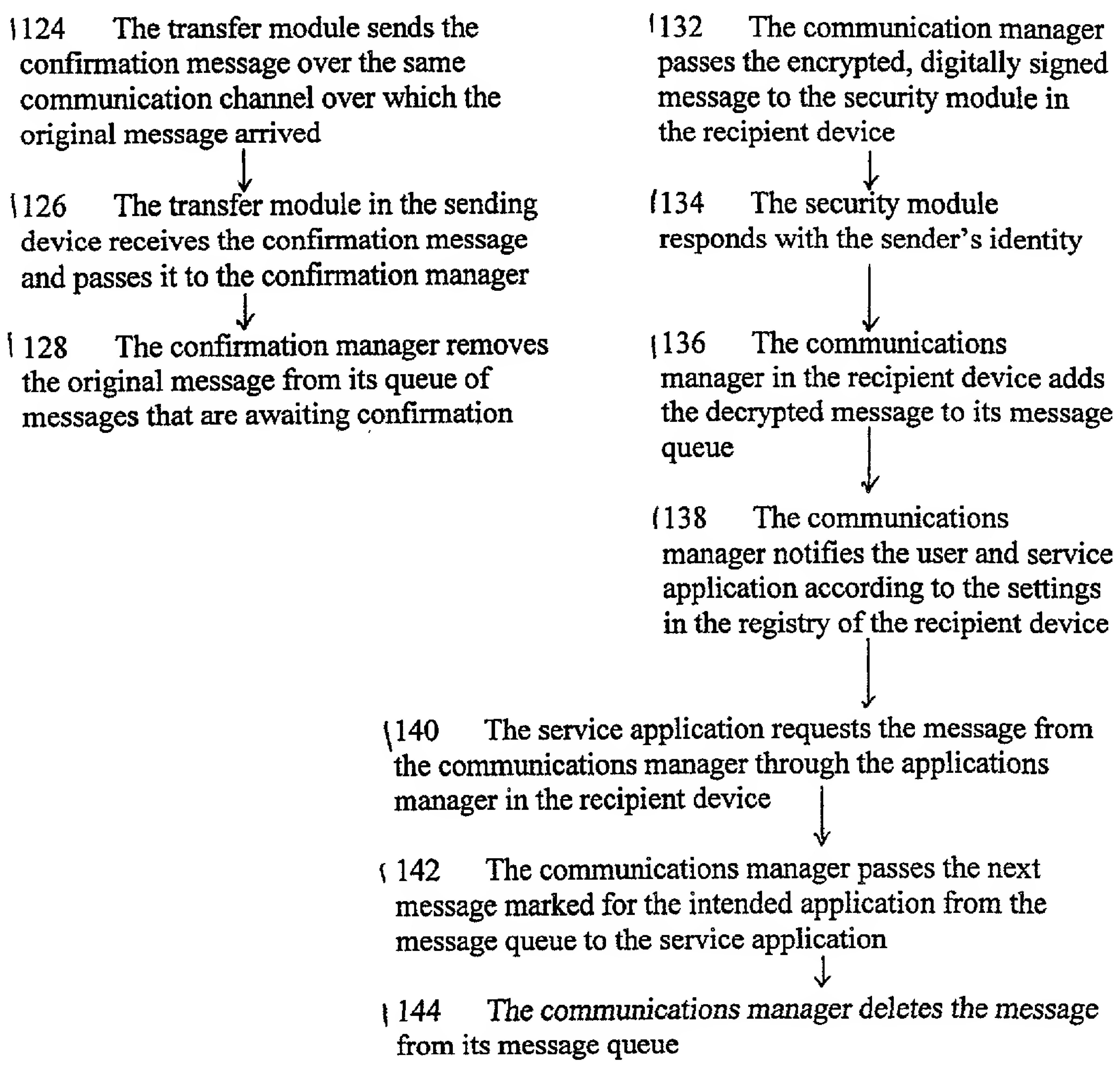
122 The confirmation manager in the recipient device adds the message identification number to its list of received messages and generates a confirmation message that is passed to the transfer module in the recipient device

130 The communications manager in the recipient device removes the header

TO 124

TO 132

FIG. 8A


124 The transfer module sends the confirmation message over the same communication channel over which the original message arrived

126 The transfer module in the sending device receives the confirmation message and passes it to the confirmation manager

128 The confirmation manager removes the original message from its queue of messages that are awaiting confirmation

132 The communication manager passes the encrypted, digitally signed message to the security module in the recipient device

134 The security module responds with the sender's identity

136 The communications manager in the recipient device adds the decrypted message to its message queue

138 The communications manager notifies the user and service application according to the settings in the registry of the recipient device

140 The service application requests the message from the communications manager through the applications manager in the recipient device

142 The communications manager passes the next message marked for the intended application from the message queue to the service application

144 *The communications manager deletes the message* from its message queue

FIG. 8B

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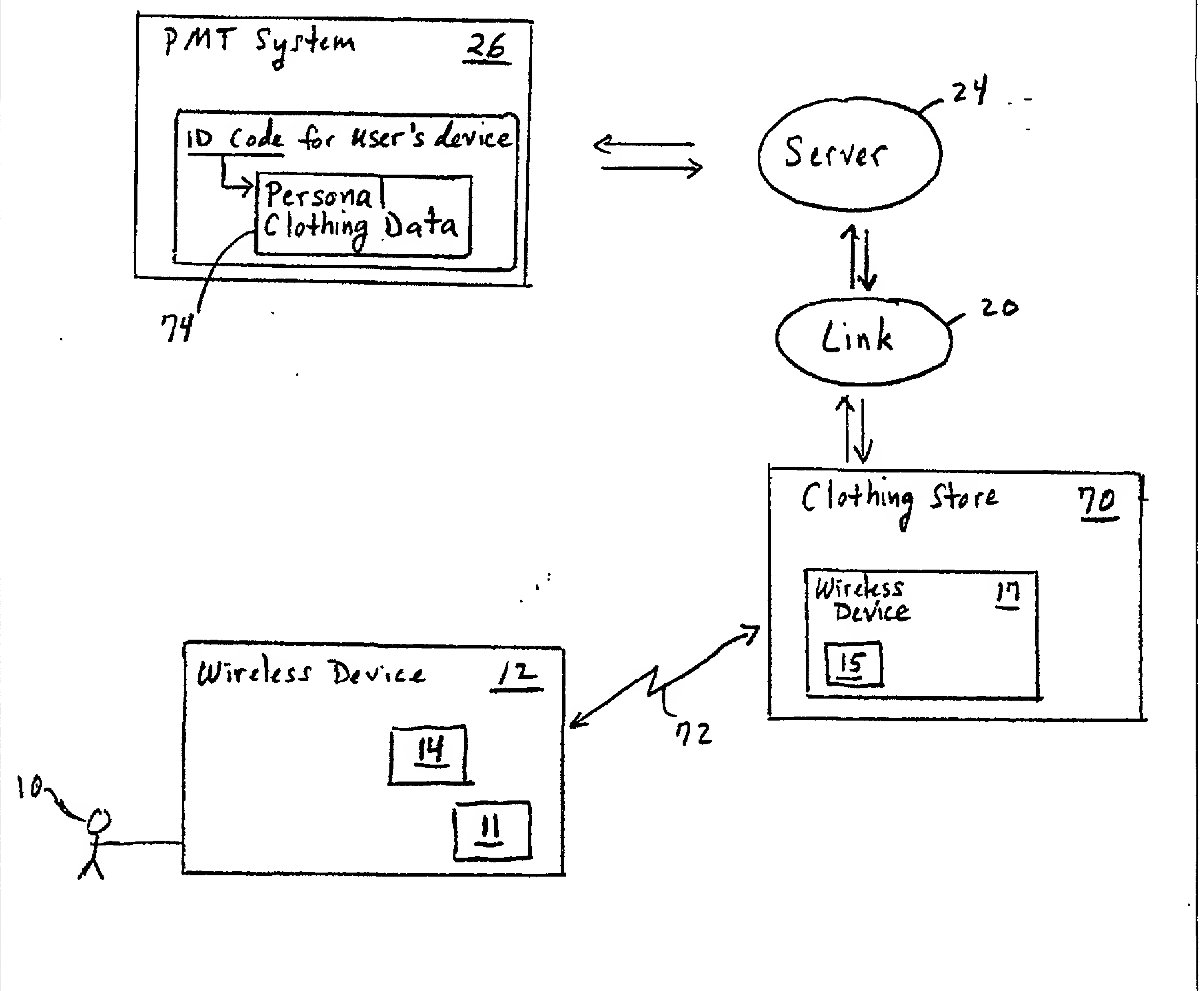

FIG. 9

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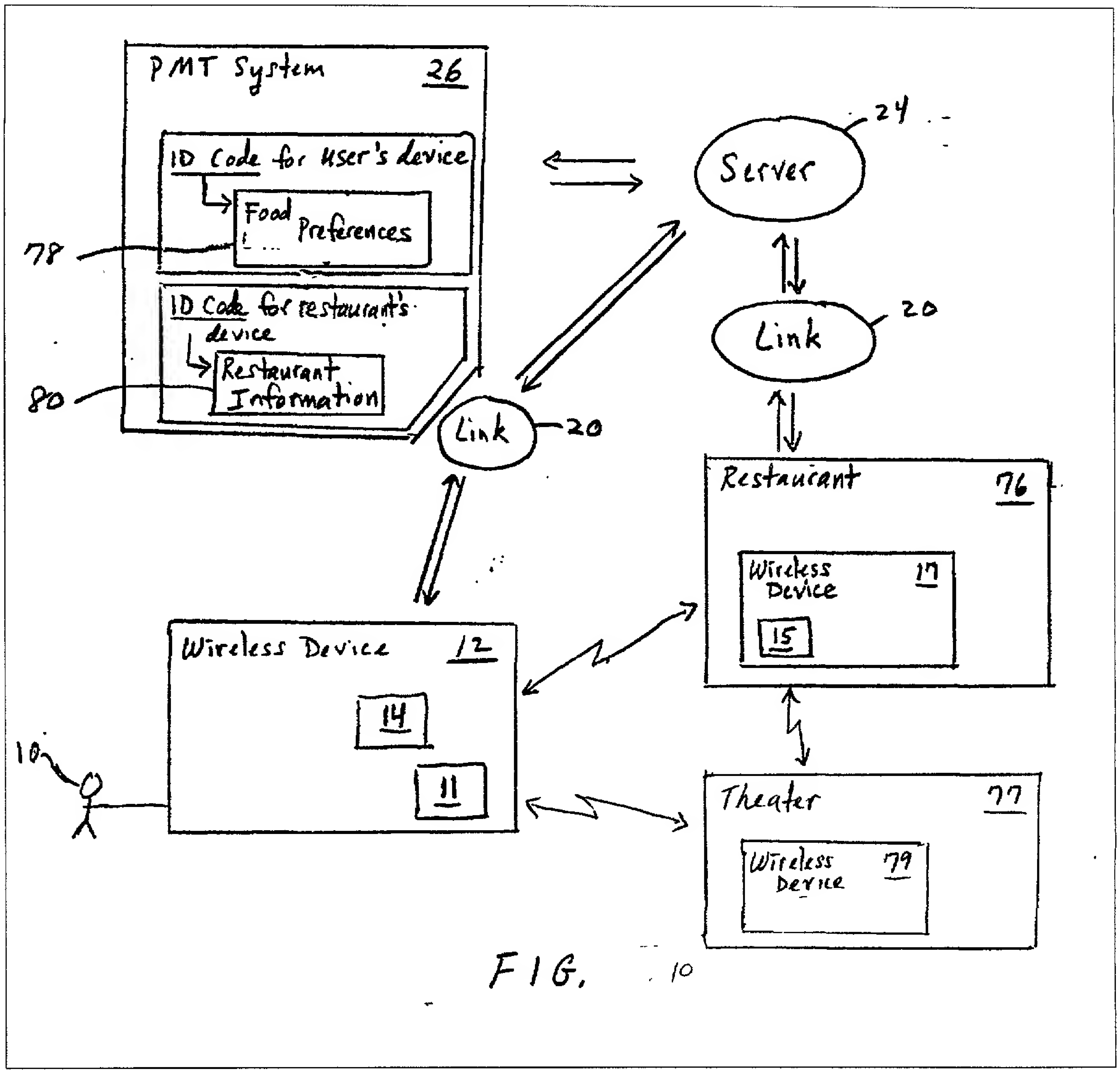

FIG. 10

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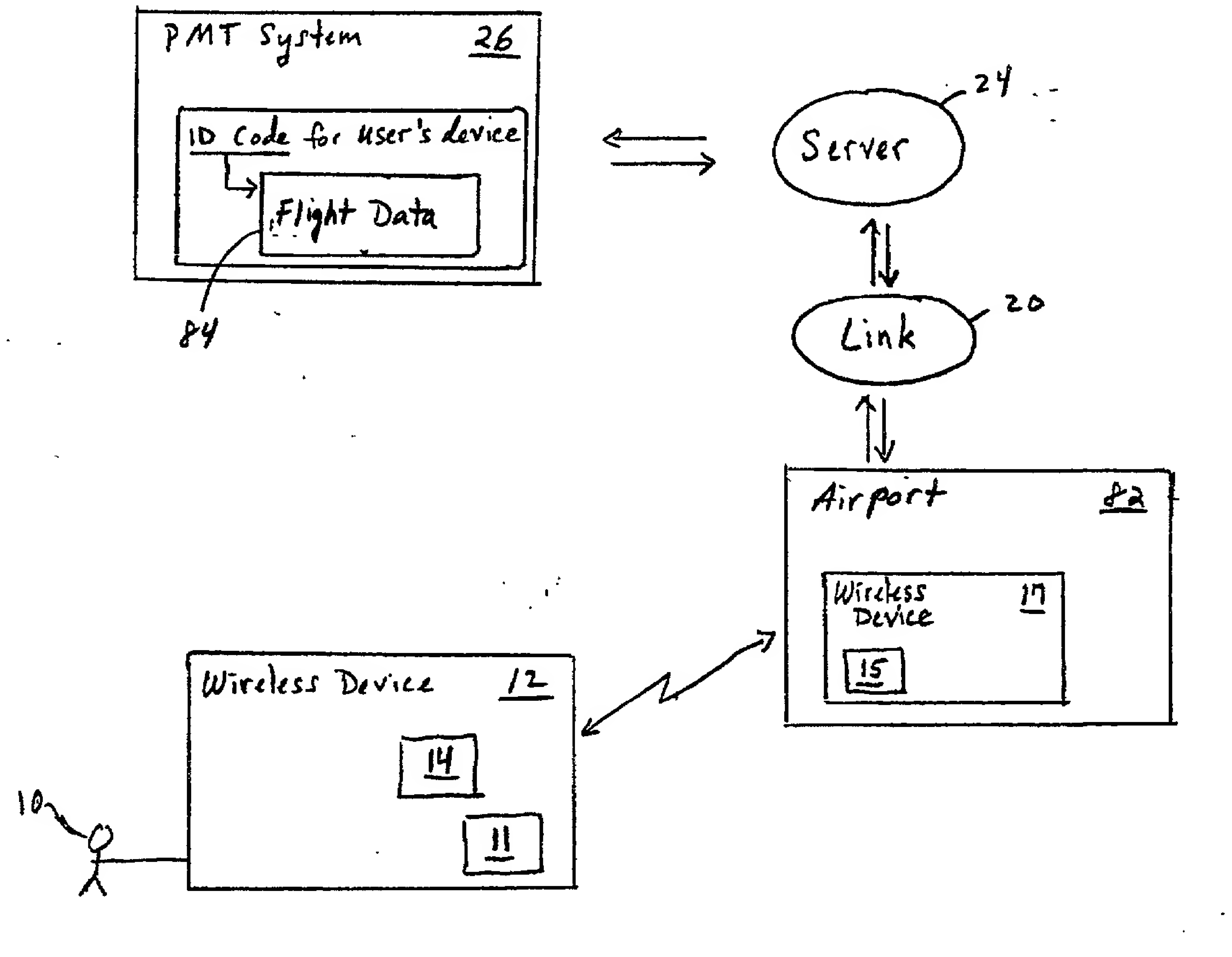
PMT System
26
ID Code for user's device
Flight Data
84
Server
24
Link
20
Airport
82
Wireless Device
17
15
Wireless Device
12
14
11
10

FIG. 11

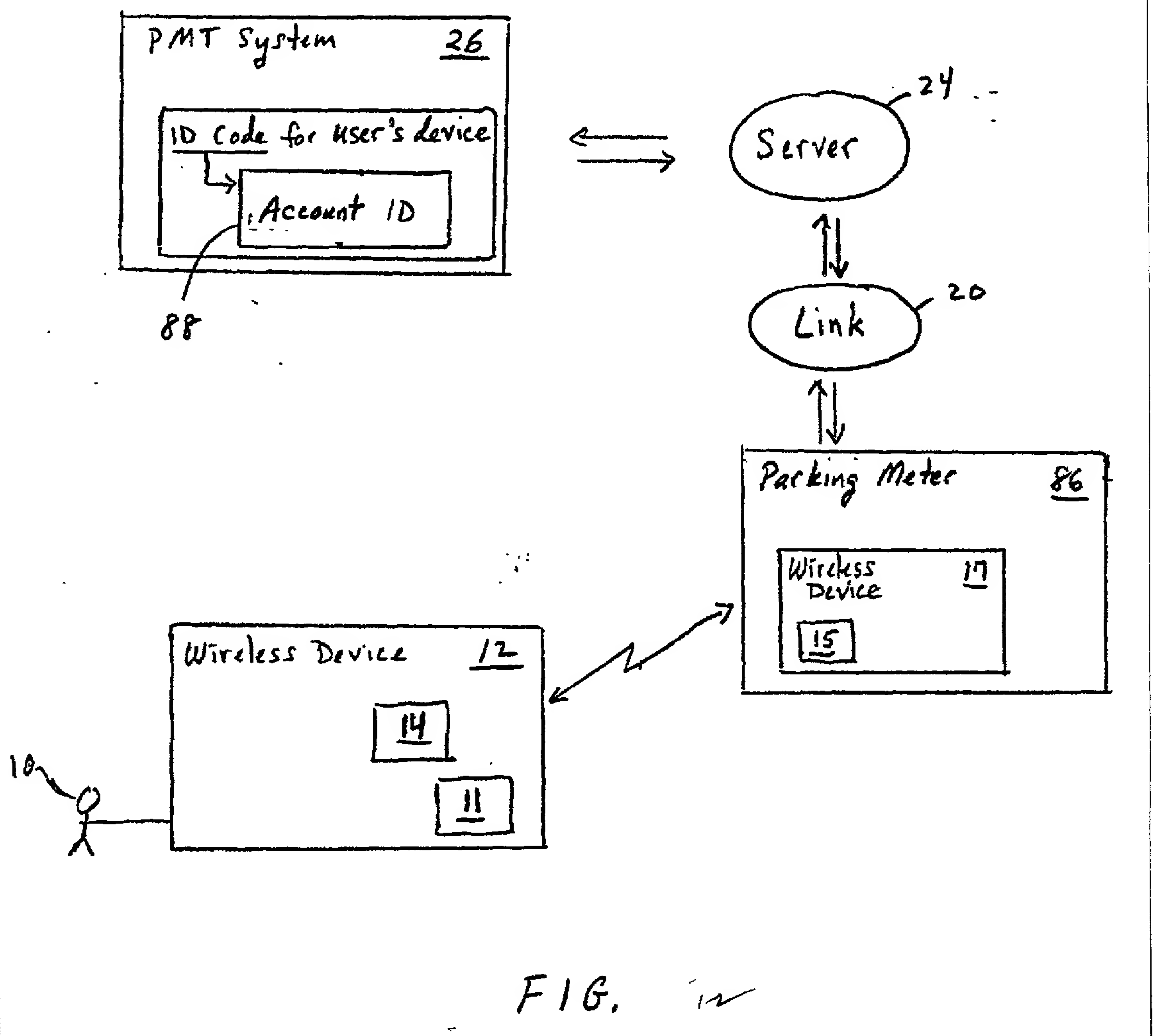

FIG. 12

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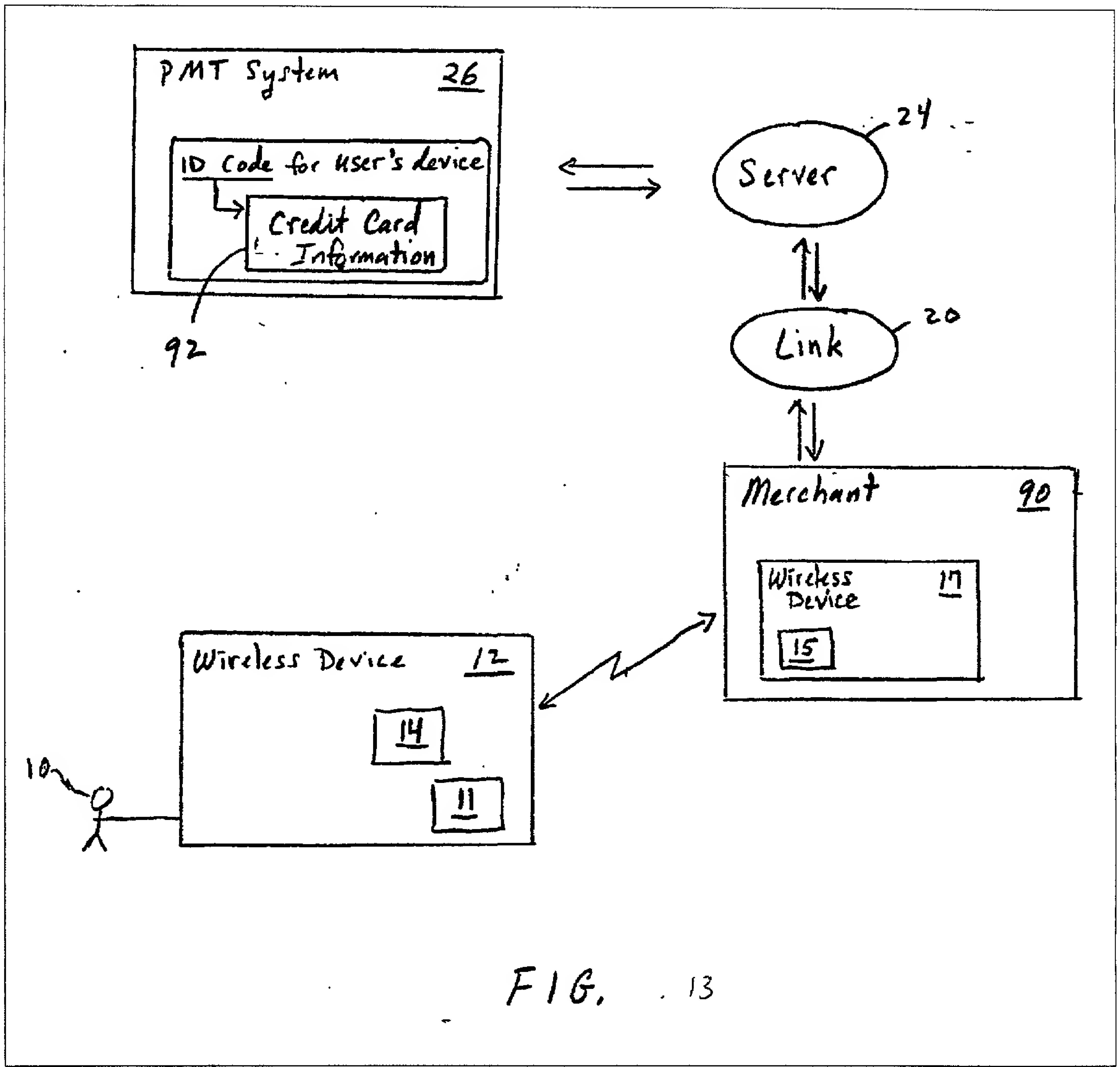

PMT System 26
ID Code for user's device
Credit Card Information
92
Server
24
Link
20
Merchant 90
Wireless Device 17
15
Wireless Device 12
14
11
10

FIG. 13

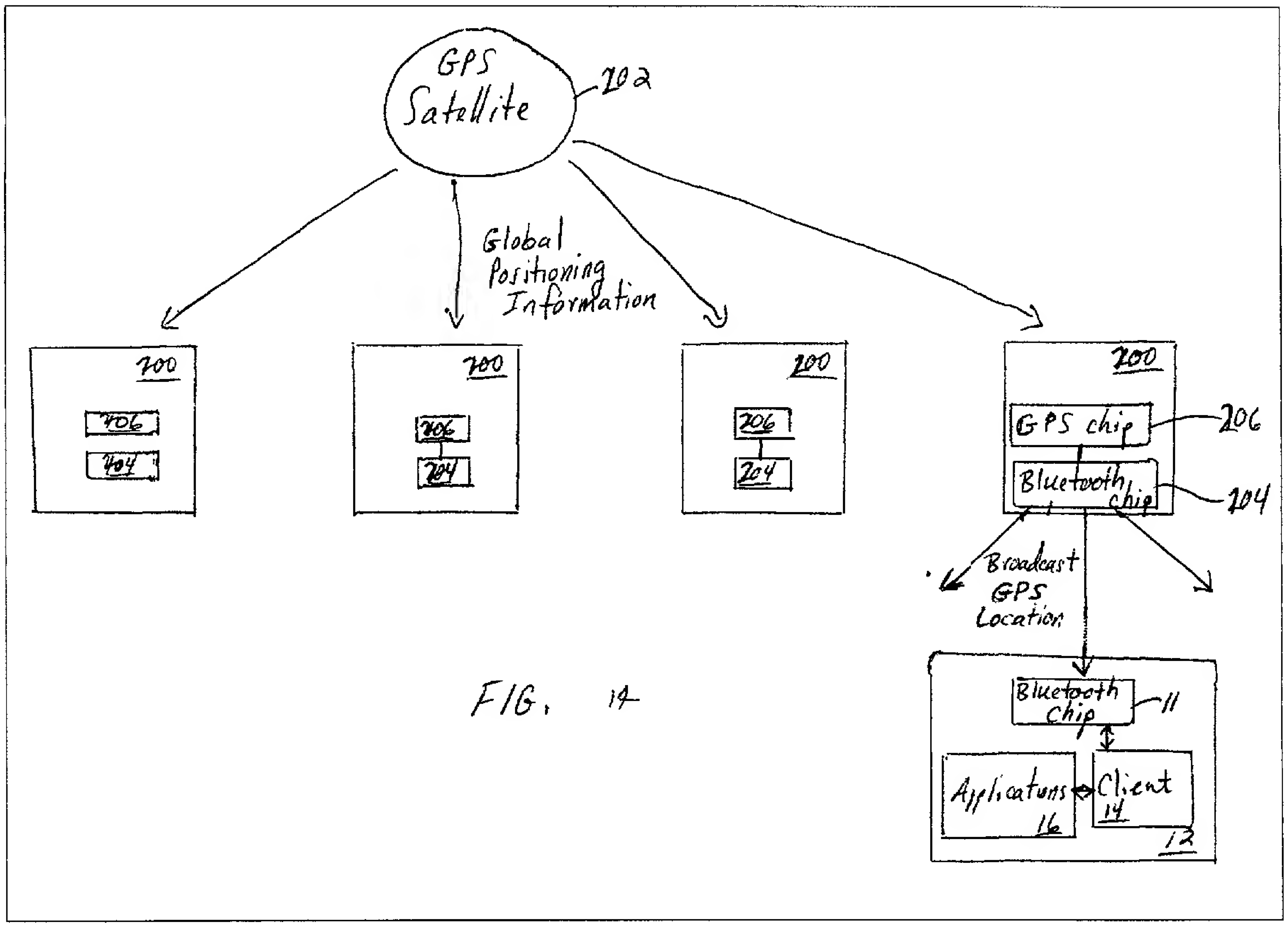
GPS Satellite
202
Global Positioning Information
200
206
204
200
206
204
200
206
204
200
GPS chip
206
Bluetooth chip
204
Broadcast GPS Location
Bluetooth chip
11
Applications 16
Client 14
12

FIG. 14